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Application No. 10/712,108
Amendment dated November 30, 2006
After Final Office Action of September 7, 2006

Docket No.: 0941-0752P

REMARKS

Claims 1-2, 4-9, 11-12, 16-18 and 20-22 remain present in this application.

Claims 14 and 15 have been amended, and claim 13 has been cancelled without prejudice or disclaimer. Reconsideration of the application, as amended, is respectfully requested.

Amendments to the Claims

The dependencies of claims 14 and 15 have been amended, due to the cancellation of claim 13. It is respectfully submitted that the foregoing amendments raise no new issues, nor do they contain no new matter.

Rejection under 35 USC 112

Claim 13 stands rejected under 35 USC 112, second paragraph. This rejection is respectfully traversed.

Without conceding the appropriateness of the Examiner's rejections, but simply to expedite prosecution of this application, it is noted that claim 13 has been cancelled, thereby rendering this rejection moot.

Rejection under 35 USC 103

Claims 1-2, 4-7 and 11-16 stand rejected under 35 USC 103 as being unpatentable over Hirano et al., U.S. Patent 5,411,624, in view of Drage, U.S. Patent 4,793,975. This rejection is respectfully traversed.

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Claims 8 and 17 stand rejected under 35 USC 103 as being unpatentable over Hirano et al. and Drage, in view of the Applicant's Admitted Prior Art. This rejection is respectfully traversed.

Claims 9 and 18 stand rejected under 35 USC 103 as being unpatentable over Hirano et al. and Drage and further in view of Maki, U.S. Publication 2005/0098120. This rejection is respectfully traversed.

Claims 20-22 stand rejected under 35 USC 103 as being unpatentable over Hirano et al. in view of the Applicant's Admitted Prior Art, Maki and Drage. This rejection is respectfully traversed.

Independent Claims 1 and 11

The prior art utilized by the Examiner, either alone or in combination, fails to teach or suggest at least the following features of the present application:

<i> "a conductive layer comprising a bottom portion with a bottom width accommodated in the recess and an upper portion with an upper width not accommodated in the recess" as set forth in claim 1 or, in the alternative, "a conductive layer embedded in the recess" as set forth in claim 11; and

<i> "the ceramic cover is lower than the substrate when the pedestal supports the substrate" as set forth in both claims 1 and 11.

With regard to item <i> above, Hirano et al. teaches the surface of the first susceptor 12 serving as the *anode* electrode (see column 5, rows 8-14). The Examiner asserts that the first susceptor 12 is used as an electrode and therefore must be conductive. However, asserting that the first susceptor 12 is a conductive layer is contrary to certain descriptions in Hirano et al.

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For example, assuming *in arguendo* that the first susceptor 12 of Hirano et al. is a conductive layer, it is noted that Hirano et al. further discloses a conductive *cathode* ring 22, made of SiC or amorphous carbon, placed on the upper surface of the first susceptor 12. Fig. 2 of Hirano et al. shows that there is nothing disposed therebetween to electrically isolate the first susceptor 12 and the conductive cathode ring 22. Thus, continuing to assume that the first susceptor 12 is a conductive layer, one of ordinary skill in the art would acknowledge that the conductive cathode ring 22 electrically connects the first susceptor 12. If the first susceptor 12 were to connect the conductive cathode ring 22, the first susceptor 12 would therefore also serve as the *cathode* of the electric field. It is respectfully submitted that this would be *contradictory* to the description in column 5, lines 8-14, that first susceptor 12 serves as the *anode* electrode. As is apparent to one of ordinary skill in the art, the same first susceptor 12 cannot be both an anode and a cathode. Thus, the Examiner is incorrect in his assertion that the first susceptor 12 is a conductive layer.

In fact, Hirano et al. only discloses that the *surface* of the first susceptor 12 is conductive. Since Fig. 2 of Hirano et al. shows the conductive cathode ring 22 directly contacts the upper surface of the first susceptor 12, it should be clear to one of ordinary skill in the art that the first susceptor 12 further comprises an insulator between the conductive surface (serving as the anode) thereof and the conductive cathode ring 22, and the first susceptor 12 therefore cannot be considered a conductive layer.

It is therefore respectfully submitted that Hirano et al. fails to teach or suggest "a conductive layer comprising a bottom portion with a bottom width accommodated in the recess and an upper portion with an upper width not accommodated in the recess" as is recited in

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independent claim 1 of the present application, and "a conductive layer embedded in the recess" as is recited in independent claim 11 of the present application.

With regard to Drage, this patent teaches a lower electrode 10 comprising an annular depression 11 defining a central pedestal 12 for receiving a semiconductor wafer and a lower electrode 32 comprising similar structure with the lower electrode 10. Drage does not teach or suggest that the central pedestal 12 is an "upper" portion. The Examiner's attention is drawn to the fact that the central pedestal 12 is as high as the ring 10, and central portion of the lower electrode 32 is as high as the edge thereof (see column 1, lines 25-27, column 3, line 16, and Figs. 1 and 3). Moreover, Drage does not teach or suggest an insulating base or the like embedded in the lower electrode 10 or 32.

Since Drage does not teach or suggest an insulating base or the like embedded in the lower electrode 10 or 32, Drage cannot teach or suggest any relation between the insulating base or recess thereof and the lower electrode 10 or 32. Thus, the combination of Hirano et al. and Drage fails to teach or suggest "a conductive layer comprising a bottom portion with a bottom width accommodated in the recess and an upper portion with an upper width not accommodated in the recess" as is recited in independent claim 1 of the present application, and "a conductive layer embedded in the recess," as is recited in independent claim 11 of the present application.

With regard to item <ii> above, the Examiner asserts that Hirano et al. teaches that the height of the ceramic cover can be adjusted to achieve a desired etching rate (including the height where the cover is lower than a substrate).

Hirano et al., however, clearly discloses that the upper surface of the auxiliary ring 24 is *set higher than* the surface of the wafer 10, so that the strength of the high-frequency electric

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field in the space above the auxiliary ring 24 becomes larger than that of the electric field in the space above the wafer 10. This results in uniform force acting on the electrons in a region generating the magnetron plasma (see column 5, lines 56-61 and column 6, lines 10-30).

Further, Hirano et al. only discloses the results from the upper surface of the auxiliary ring 24 1.5mm and 3.5mm being *higher than* the surface of the wafer 10 in Figs. 4, 7 and 5, 8, Hirano et al. does *not* disclose the results from the upper surface of the auxiliary ring 24 being *lower than* the surface of the wafer 10. Therefore Hirano et al. does not suggest the upper surface of the auxiliary ring 24 being lower than the surface of the wafer 10. One of ordinary skill in the art could not predict success in the upper surface of the auxiliary ring 24 being *lower than* the surface of the wafer 10, based on the disclosure of Hirano et al.

Accordingly, it is respectfully submitted that Hirano et al. fails to teach or suggest that "the ceramic cover is lower than the substrate when the pedestal supports the substrate, as is set forth in independent claim 1 of the present application.

It is respectfully submitted that neither Hirano et al. nor Drage, either alone or in combination, teaches or suggests the pedestal of independent claims 1 and 11 of the present application, as well as their dependent claims.

Independent Claim 20

With regard to independent claim 20, it is respectfully submitted that none of the prior art utilized by the Examiner teaches or suggests at least the following features of independent claim 20 of the present application:

<i> "a titanium layer having a bottom portion embedded in the recess"; and

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<ii> “the ceramic cover is lower than the substrate when the pedestal supports the substrate”.

The Examiner acknowledges that Hirano et al. and the Applicant's Admitted Prior Art fail to teach the conductive layer being titanium, and asserts Maki teaches the use of titanium as a pedestal material for the purpose of forming a temperature controlling section with superior thermal conductivity, electrical conductivity and formability.

For similar reasons to those discussed above in connection with claims 1 and 11, the first susceptor 12 disclosed by Hirano et al. cannot be considered a conductive layer. Further, if the disclosure of Hirano et al. and Maki were combined to complete a titanium first susceptor 12, the titanium first susceptor 12 would serve as both anode and cathode of the electric field. Thus, one of ordinary skill in the art would not have been motivated to form a titanium first susceptor 12 based on the teachings of Maki.

Also, for similar reasons as those discussed above in connection with claims 1 and 11, Drage does not teach or suggest any relation between the insulating base or recess thereof and the lower electrode 10 or 32.

Additionally, as discussed above in connection with the response for claims 1 and 11, Hirano et al. fails to teach or suggest the ceramic cover being lower than the substrate when the pedestal supports the substrate.

Thus, the combination of references utilized by the Examiner, either alone or in combination, would fail to teach or suggest “a titanium layer having a bottom portion embedded in the recess” and that “the ceramic cover is lower than the substrate when the pedestal supports the substrate,” as are recited in independent claim 20 of the present application.

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Summary

In view of the foregoing amendments and remarks, it is respectfully submitted that the prior art utilized by the Examiner fails to teach or suggest the pedestal of independent claims 1, 11 and 20 of the present application, as well as their dependent claims. Reconsideration and withdrawal of the 35 USC 103 rejections are respectfully requested.

Conclusion

Favorable reconsideration and an early Notice of Allowance are earnestly solicited.

In the event that any outstanding matters remain in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

In the event the Examiner does not consider this application to be in condition for allowance, it is respectfully requested that this Amendment be entered for the purposes of Appeal. This Amendment should overcome the current grounds of rejection and therefore simplify the issues for Appeal. Nonetheless, it should be unnecessary to proceed to Appeal because the instant application should now be in condition for allowance.

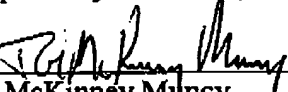
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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: November 30, 2006

Respectfully submitted,

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